

## ABSTRACT OF THE DISCLOSURE

A method for determining an optimal combustion interval during start-up of a hydrocarbon catalytic reformer under various conditions of temperature, fuel type, and combustion fuel flow rate. An initial catalyst temperature is measured and an algorithm is used to calculate a rate of heating of the catalyst by combustion based upon heat content of the fuel, selected fuel flow rate, and heat capacity and mass of the catalyst and reformer passages. From the initial temperature and the heating gradient, an optimal combustion interval is inferred through the algorithm and used to terminate combustion, initiate a combustion quench interval, and change over the fuel flow rate and mixture from combustion to reforming.